Purpose: Patients with poor prognosis testicular cancer [1] at the Royal Marsden Hospital (RMH) are currently treated with CBOP/BEP chemotherapy rather than BEP chemotherapy, following a phase II trial that demonstrated improved favourable response rates in patients treated with this modified regimen [2]. Favourable tumour marker decline following BEP chemotherapy, defined by the Gustav Roussy calculator [3], is associated with improved prognoses [4]. In patients with unfavourable marker decline, dose intensity chemotherapy is instituted at an earlier stage to improve prognoses. Currently, it remains unclear whether favourable tumour marker decline is predictive of improved prognosis in patients who receive upfront CBOP/BEP chemotherapy. The purpose of this study is to investigate whether favourable tumour marker decline in the CBOP/BEP population is predictive of improved prognoses.
Methods: A retrospective analysis of patients with poor prognosis testicular cancer treated with CBOP/BEP chemotherapy between 2004 and 2014 at RMH was undertaken with the use of electronic patient records. Overall survival and progression-free survival was calculated using Kaplan–Meier methods. Patients with favourable tumour marker decline were compared using the log rank test to those who had an unfavourable tumour marker decline. Surviving patients were censored at the date of last follow-up.
Results: 61 patients with a median age of 32 years were identified. They were followed-up for a median of 10.2 years. Over this period there were 29 deaths, with 3 due to treatment-related toxicity. 79% of patients had an unfavourable tumour marker decline with no significant progression-free survival or overall survival difference between patients with favourable and unfavourable tumour marker decline.
Conclusion: Unfavourable tumour marker decline in patients with poor prognosis testicular cancer is used to institute high intensity chemotherapy to improve prognoses. This study suggests that tumour marker decline may not be predictive of prognosis in patients already treated with the modified CBOP/BEP regimen.
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A 15 Year Retrospective Audit of the Incidence and Outcomes for Germ Cell Cancers Treated at the Edinburgh Cancer Centre 2000–2015

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Purpose: Testicular germ cell tumours are highly curable even when presentation is with metastatic disease. Outcomes are best when diagnosis is at an early stage as mortality increases the higher the stage at presentation. As awareness of testicular cancer has improved over time (including media campaigns), the percentage of patients with metastatic disease at diagnosis should have decreased with time. We evaluated this with a local audit – ultimately aiming to collaborate with other centres to present national data for Scotland.
Methods: 15 year retrospective audit of the incidence, histological subtype, stage, prognostic group and outcomes for all germ cell tumours treated at the Edinburgh Cancer Centre 2000–2015.
Results: In total, 979 patients were diagnosed over 15 years. The average incidence per year was 61 with $n = 40$ seminoma, $n = 21$ non-seminoma. Of the 979 patients, 204 had nodal disease at diagnosis and 52 had visceral metastases. Over this period there were 17 deaths attributable to metastatic cancer. Death rate over 15 years 1.7%. The percentage of metastases at diagnosis was highest in 2014 at 10.6%, although there were no deaths from testicular cancer in this cohort. Interestingly in 2007 9.5% had metastases at diagnosis and the percentage of deaths was 4.8%. Since 2007 the incidence of cancer-related deaths has declined and in 2014 and 2015 there were no cancer-related deaths.
Conclusion: The results of our audit demonstrate the incidence of metastases at diagnosis has not decreased over time as anticipated. In fact, the peak incidence was in 2015. Despite this finding, outcomes have improved, with the percentage of cancer-related deaths continuing to decline despite a potential increase in incidence of metastatic disease. Further evaluation is now being undertaken to assess in detail the prognostic groups and compare the treatment regimens to assess if these explain the improved outcomes.

Development of a Multi-professional Testicular Cancer Patient Follow-up Clinic – Experience from the Royal Marsden Hospital

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Purpose: Testicular germ cell tumours (GCT) are the most common cause of cancer in men aged between 15 and 40 years. Although most patients can expect to be cured, there is a high risk of relapse. Salvage treatments can cure up to 50% [1] of these patients; therefore a robust follow-up schedule is necessary. The aims of this study were to evaluate:
(1) Local follow-up practice against nationally published evidence-based guidelines [2];
(2) Proportion of patients with disease relapse;
(3) Requirement for a specialist nurse led clinic.
Methods: A retrospective analysis of testicular GCT patients reviewed by a doctor either in clinic or as a telephone consultation between March and April 2017 at The Royal Marsden Hospital was performed. Patients were excluded if receiving chemotherapy or radiotherapy. Patient characteristics, reason for attendance, clinical outcome, last treatment date, history of recurrence and clinical trial involvement were collated from electronic patient records. Patients beyond 5 years from treatment for stage I seminoma and beyond 2 years for all other stages were documented as potential patients for nurse-led follow-up.
Results: 220 patients (124 non-seminomatous GCT, 95 seminoma, 1 Sertoli cell tumour) from 230 outpatient and 33 telephone consultations were included in the analysis. Median (IQR) follow-up from treatment was 26.5 (9.75–66) months. The majority of patients (93.8%) attended as per protocol; 46 (20.9%) patients had disease recurrence since treatment, with median (IQR) time from initial treatment to first recurrence of 11.5 (6–44.7) months, nurse-led follow-up was considered suitable for 75 (28%) of the consultations
Conclusion: The median time to recurrence was within 2 years from treatment, supporting the robust follow-up process. A nurse-led telephone clinic after 2 years of follow-up could help reduce pressure on doctor-led clinics and support long-term follow-up. A proforma has been developed for this to be integrated into clinical practice and patient and staff feedback from this initiative will be collected.
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Real-world Experience of Cabozantinib in Patients with Metastatic Renal Cell Carcinoma and Cost Saving from Free-of-Cost Access Scheme

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Purpose: Cabozantinib is a multi-targeted tyrosine kinase inhibitor, approved for treatment in advanced renal cancer carcinoma (aRCC) patients who had prior anti-angiogenic agents. Cabozantinib was provided free-of-cost through a managed access programme (MAP) in Scotland from October 2016 until SMC approval in June 2017. We aim to evaluate outcomes with cabozantinib and identify potential cost savings from participation in the MAP.

Methods: Electronic case records of aRCC patients treated at Beatson West of Scotland Cancer Centre, Glasgow from October 2016 to December 2017 were reviewed. To estimate potential cost savings (per BNF), cabozantinib costs (£4800/28 days) were compared with axitinib second-line (£3517/28 days) or everolimus third-line (£2492/28 days). Patients receiving cabozantinib beyond third-line were assumed to have received best supportive care.
Results: 48 patients (30 male, 18 female), median age 63 years (range 39–81) were treated from October 2016 to December 2017. Patients had WHO performance status of 0 (68%), 1 (29%) and 1 (2%) with clear-cell (81%), papillary (14%) and unclassified (4%) histology. 30 patients (62%) had nephrectomy and 27%, 52% and 21% patients had good, intermediate and poor risk aRCC. 28 (58%), 15 (31%), 4 (8%) and 1 (2%) patients received cabozantinib as second-, third-, fourth- and fifth-line treatment, respectively. Median follow-up was 288 days (range: 26–643) and median number of cycles 5 (range 1–16). The median duration of treatment was 161 days (95% CI 125–271) and the median overall survival was 293 days (95% CI 246–506). Cabozantinib cost was £948 865 in the MAP ($n = 28$). The equivalent cost for second-line axitinib ($n = 14$) or third-line everolimus ($n = 11$) was £585 298.
Conclusion: Duration of treatment in heavily pretreated heterogeneous patients was similar to that in pivotal trial. The provision of cabozantinib within a MAP resulted in an estimated cost saving of nearly £600 000.